

**Patent Claims**

1. A device for recording the parameters of an aerosol, in particular in an inhalation therapy device, comprising
  - a. a transmitting means (7)
    - i. which is disposed on a body (5) that at least partially surrounds an aerosol resting area (A), and
    - ii. which emits radiation into said aerosol resting area (A) through a translucent material (13);
  - b. a first receiving means (8),
    - i. which is disposed on the body (5) that at least partially surrounds said aerosol resting area (A),
    - ii. which is disposed in relation to said transmitting means (7) so as to primarily receive transmission radiation (TL), and
    - iii. which emits a first analysis signal ( $I_{TL}$ ) that corresponds to the intensity of the received transmission radiation TL;
  - c. a second receiving means (9),
    - i. which is disposed on the body (5) that at least partially surrounds said aerosol resting area (A),
    - ii. which is disposed in relation to said transmitting means (7) so as to primarily receive scattered radiation (SL), and
    - iii. which emits a second analysis signal ( $I_{SL}$ ) that corresponds to the intensity of the received scattered radiation; and
  - d. a control means (10), to which the first and second output signals ( $I_T$ ,  $I_S$ ) are supplied and which analyses the first and second output signals ( $I_T$ ,  $I_S$ ) in order to determine the parameters of an aerosol in said aerosol resting area.

2. A device for recording the parameters of an aerosol according to claim 1, characterised in that the transmitting means (7) emits the radiation through a first translucent wall section (13) of the body (5) surrounding the aerosol resting area (A).
3. A device for recording the parameters of an aerosol according to claim 1 or 2, characterised in that the first receiving means (8) receives the transmission radiation (TL) through a second wall section (14) of the body (5) surrounding the aerosol resting area (A).
4. A device for recording the parameters of an aerosol according to claim 1, 2 or 3, characterised in that the second receiving means (9) receives the scattered radiation (SL) through a third wall section (15) of the body (5) surrounding the aerosol resting area (A).
5. A device for recording the parameters of an aerosol according to one of the preceding claims, characterised in that the body (5) surrounding the aerosol resting area (A) is made of a translucent material.
6. A device for recording the parameters of an aerosol according to one of claims 1 to 4, characterised in that the body (5) surrounding the aerosol resting area (A) is made of a transparent material and the transmitting means (7) is provided with a surface made of a translucent material, through which radiation is emitted.
7. A device for recording the parameters of an aerosol according to one of the preceding claims, characterised in that the first receiving means (8) is provided with a surface made of a translucent material, through which the radiation is received.
8. A device for recording the parameters of an aerosol according to one of the preceding claims, characterised in that the second receiving means (9) is provided with a surface made of a translucent material, through which the radiation is received.
9. A device for recording the parameters of an aerosol according to one of the preceding claims, characterised in that the control means (10) activates the transmitting means to emit the radiation into the aerosol resting area (A).
10. A device for recording the parameters of an aerosol according to claim 9, characterised in that the control means (10) activates the transmitting means (7) such that first time periods (Z1), in which the transmitting means (7) emits radiation into

the aerosol resting area (A), alternate with second time periods (Z2), in which the transmitting means (7) does not emit radiation into the aerosol resting area (A).

11. A device for recording the parameters of an aerosol according to claim 9 or 10, characterised in that in the second time periods (Z2), the control means (10) determines the proportion ( $I_{TLU}$ ,  $I_{SLU}$ ) of ambient light in the output signals of the first and/or second receiving means (8, 9).
12. A device for recording the parameters of an aerosol according to claim 11, characterised in that the control means (10) makes use of the proportion of ambient light when analysing the output signals of the first and second receiving means (8, 9).
13. A device for recording the parameters of an aerosol according to claim 12, characterised in that the control means (10) forms the difference of the output signal ( $I_{TL}$ ) of the first receiving means (8) and the first ambient light proportion ( $I_{TLU}$ ) and/or the difference of the output signal ( $I_{SL}$ ) of the second receiving means (9) and the second ambient light proportion ( $I_{SLU}$ ).
14. A device for recording the parameters of an aerosol according to claim 13, characterised in that the control means (10) forms the quotient ( $Q_A$ ) from the difference of the output signal ( $I_{SL}$ ) of the second receiving means (9) and the second ambient light proportion ( $I_{SLU}$ ) and the difference of the output signal ( $I_{TL}$ ) of the first receiving means and the first ambient light proportion ( $I_{TLU}$ ).
15. A device for recording the parameters of an aerosol according to one of the preceding claims, characterised in that the control means (10) forms the quotient ( $Q_A$ ) from the output signal ( $I_{SL}$ ) of the second receiving means (9) and the output signal ( $I_{TL}$ ) of the first receiving means (8).
16. A device for recording the parameters of an aerosol, characterised in that the radiation emitted by the transmitting means (7) is light, in particular infrared light.
17. Inhalation therapy device having a device for recording the parameters of an aerosol according to one of claims 1 to 16, characterised in that the body surrounding the aerosol resting area is a mouthpiece (5) of the inhalation therapy device.
18. Inhalation therapy device according to claim 17, characterised in that a nebuliser nozzle (40) or a membrane nebuliser (52) is provided.

19. Inhalation therapy device according to claim 18, characterised in that the control means (10) is connected with a compressor (2) for the nebuliser nozzle (40) or with an excitation device (56) for the membrane nebuliser (52).